

Statement of
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Mr. Chairman, Members of the Committee. Good morning and thank you for this opportunity to appear before you today on the US Climate Action Partnership's or US CAP's principles and recommendations for climate change legislation.

I am John Rice, Vice Chairman of the General Electric Company, and President and CEO for GE Infrastructure. GE's Infrastructure organization includes our aviation and energy businesses, our financial service units for aviation and energy, as well as our oil and gas, rail and water businesses.

GE's founder, Thomas Edison, built the first coal-fired power plant, the Pearl Street Station in Manhattan, in 1882. In those early days of GE it was the electric motor and the incandescent light bulb that were the technological breakthroughs of the time. During the next 125 years, the electricity industry and GE grew and changed together.

Today, we find ourselves at another crossroads, perhaps as important as the one Edison faced at the end of the 19th Century. At the dawn of the 21st century, climate change and energy independence compel us to search for smarter and cleaner ways to use energy and slow, halt and ultimately reverse the impacts of climate change.

This challenge is what brings us here today. What we confront is the need for a fundamental transformation in the way we do business. This is clearly recognized in the US CAP's *Call to Action*, when it states: "The scale of the undertaking to address climate change is enormous, and should not be underestimated. For this issue to be successfully addressed—and failure is not an option—the way we produce and use energy must fundamentally change, both nationally and globally."

GE Energy is a worldwide supplier of advanced electrical generation equipment and service solutions for the power generation industry. GE is unmatched in providing technologies that operate on a comprehensive array of electricity generating fuels from nuclear, to fossil fuels like natural gas and coal and renewables including hydro, solar, wind, and biomass. We are also a leader in the development of advanced research for fuel cells and hydrogen.

GE at its heart is a technology company and one that has stood the test of time. We have stood the test of time and remained a technology leader because of our

commitment to always invest in next generation technologies needed by the country to address the problems we face. Over the last 5 years, we have invested over \$600 million annually or \$3 Billion total in advanced energy technologies. And going forward, our ecomagination commitment is to continually increase our annual investment in research on next generation, cleaner technologies to \$1.5 Billion by 2010.

In short, what we are looking for with respect to climate policy, and what we believe our customers want as well, is *clear, consistent* governmental policy to help us as we address the next big challenges in developing and deploying energy technologies that enable the country to address the climate issue in the most cost-effective way possible.

GE believes a diverse fuel mix for electricity generation is necessary to ensure the security and reliability of our customers' power generation portfolios as well as the Nation's energy independence. We also believe that our country's energy and environmental policies should promote a balance of available, reliable, clean and low cost energy.

GE is a founding member of US CAP. We, along with nine other companies, became members after Environmental Defense (ED) and the World Resources Institute (WRI) approached us and asked us to work with them, NRDC and the Pew Global Climate Center to explore developing a consensus on an approach

to US legislation on climate change. US CAP legislative principles and recommendations were jointly released on January 22.

US CAP's *Call to Action* is a consensus document that represents a remarkable agreement among participants with a wide range of interests and opinions.

Through US CAP, we all agree:

- The science is sufficient to act now on climate, and that the need for certainty supports legislative action sooner rather than later.
- The response should be global, and include all major emitting nations in the developing world, but that the US must lead if we are ever going to have a workable global solution.
- All major emitting sectors of the US economy should be a part of the solution—no one sector should bear the burden alone; but that the solution should also be flexible and take into account the economic and competitive needs of particular sectors through phasing and sector specific measures.
- The primary imperative of legislation should be to prevent unacceptable greenhouse gas concentrations in the atmosphere in a cost effective way that recognizes the need for economic growth. This can best be achieved through market-based mechanisms and incentives, particularly through a cap and trade program.

- Cost control measures, including a “safety valve,” may be necessary and offsets from projects in the developing world should be a compliance option.
- The program needs to be fair and disproportionate impacts to sectors, regions and groups must be addressed.
- A significant portion of carbon allowances initially should be distributed free to capped entities and those disproportionately impacted; but over a reasonable period of time, these allocations should be phased to an auction system.
- Technology is ultimately the most effective and impactful manner in which to address climate change. The adoption of policies that establish a market price for carbon and other greenhouse gases over the long term will stimulate research, development and deployment of lower emitting and lower cost technologies.

Because GE is a technology company, it is on this last point that I would like to focus my remarks. In our view it is impossible to divorce policy decisions from technology decisions. Clear policy accelerates technology development and deployment. I would like to illustrate this with two examples:

First, if we look at gas turbine technology performance, we have increased efficiency from 40 to 60 percent and reduced NOx emissions by a factor of 8 over the last decade. The driving force for this result was a combination of

requirements of the Clean Air Act and research and development support from the Department of Energy, our investments and market and competitive factors

Secondly, let's look at what has been learned from our experience with wind energy. Fifteen years ago, the technology and the industry hardly existed. In 2006 the US wind energy industry installed nearly 2,500 megawatts of new generating capacity—this represented a growing annual investment of \$4 Billion in the energy infrastructure and energy independence of the US. The total installed capacity of wind in the US is now over 12 Thousand megawatts, an increase of 27% over 2005. We believe the industry will continue to grow globally through 2030 at an estimated rate of 13% CAGR with clear policy in place. This growth was fueled by government policy encouraging wind energy has been pivotal in the development of this technology worldwide. In the US the policy has been the federal Production Tax Credit and Renewable Portfolio Standards in over 20 states, which will continue to be an important element of developing this industry. In Europe, the growth of the wind industry has been driven by similar policies, although they have been more consistently applied, particularly in Germany, which is why their installed base has grown so quickly and their wind technology is so competitive in the global market.

The need for clear, consistent policy on green house gas emissions is especially critical at this time. In the near future, the US power industry will begin to build significant new capacity. Without long term, clear, consistent policy direction that

creates a market price for carbon, technologies that can address these emissions will not be developed and deployed to their full potential, regardless of whether they are renewables, natural gas, nuclear, or cleaner coal with carbon capture and sequestration. To best address the climate issue in the most cost effective way, we need policy action now, because this new generating capacity will be with us for a very long time.

Continuing the uncertainty in how the greenhouse gases will be addressed distorts technology decisions for new capacity in the US and could make responding to the climate issue more costly in the future. An example of this distortion is demonstrated by IGCC. In the US, power generation technology decisions must be justified on the basis of costs for rate recovery in the case of regulated utilities, or on financing in the case of independent power producers. While such cost-based requirements make sense, because there is no greenhouse gas policy, it also effectively disadvantages technologies, such as IGCC, that may have higher initial capital costs, even though they can or will become more cost effective than existing technologies when carbon is taken into account. The end result is a strong current bias against deploying IGCC even though carbon regulation is generally viewed as inevitable.

With respect to coal and coal technology, I would like to make one additional point. Coal fuels about 51% of electricity generation in the US. It also supplies an even larger percentage in China (79%) and India (68%). GE believes that

coal will continue to be a significant source of energy in the United States and in a carbon-constrained world. Neither China nor India will likely reduce their use of coal, and we should not do so either and for the same reason: Coal is an abundant, reliable, and a relatively inexpensive energy source. Using it is necessary for energy independence and US competitiveness. If we are to address climate change, which we agree must be done, it is imperative that our energy and environmental policies speed development and deployment of cleaner coal technologies and carbon capture and sequestration (CCS). CO₂ has been injected into the ground for enhanced oil recovery (EOR) for decades, and this beneficial use and storage of CO₂ should be continued and encouraged with expanded incentives; but we need to be clear that EOR has not been conducted on the scale or for the long period of time that will be required for CCS from coal powered electric generation. The ability to do so at scale needs to be further developed. From the evidence provided by experts in the scientific community (see attachments), the prospect for successful long-term geologic sequestration is good. We recommend legislation include at least three large-scale demonstration projects. Legislation must also include a clear legal and liability framework for CCS and encourage and reward those who undertake sequestration in the near term through credit for early action and other incentives.

GE believes a cap and trade system will not only create incentives for the deployment of currently available technologies, it will also drive accelerated

innovation of emerging technologies currently in the development pipeline that could change the way the world produces power, including hydrogen energy systems.

We have commercially available technology today that can reduce greenhouse gases from power generation sources. As time is limited today, I will focus on four of our technologies for doing so:

- The first are our truly air emission free generating technologies of wind and solar. Wind is the fastest growing segment in GE Energy's technology portfolio. In 2006, GE was the largest provider of wind turbines in the United States, selling over two thousand wind turbines worldwide with two-thirds of the units staying in North America. We sold 40% more wind turbines in 2006 than we did in 2005. Since acquiring the business in 2002 with an investment of about \$300 Million, GE has invested nearly as much to improve the technology, and this investment has contributed significantly to our sales growth. Today we build turbines that have 30% more energy capture per turbine than the turbines that were made by Enron when GE acquired the business. In the last 4 years, we have made progress on the following aspects of wind turbine technology that when combined have significantly improved wind turbine performance - higher capacity factors, improved reliability, longer, lighter blades, advanced controls and seamless grid integration. From 2002 to 2006, GE has driven technology advancements to increase the capacity

factor of wind turbines from less than 38% to approximately 47% to realize best in class performance. A one-point increase capacity factor over the US installed base produces enough electricity for 90,000 average households.

- The second is GE gas reciprocating engines: These high efficiency engines burn methane gas from landfills, coal mines and agricultural waste to reduce the venting or flaring of these greenhouse gases in the atmosphere. Each ton of methane has 21 times greater an impact on greenhouse gases than a ton of CO₂. We have more than 1,600 of these engines deployed around the world, producing nearly 1,500 GWs of power.
- The third technology is nuclear, which is a key part of a balanced energy portfolio and an essential technology for addressing climate change. Its fuel source is not subject to high price volatility and it does not produce carbon from electricity generation. GE is improving on its technology leading ABWR designs to produce and license a simplified design ESBWR, with passive safety features, improved safety and security, and a modular design with reduced capital costs.
- The fourth technology is IGCC. We are in process of contracting to build 600 MW facilities for AEP, Duke Energy and others. We are working with other customers, such as BP, who will use carbon captured from IGCC for enhanced oil and gas recovery. We believe that IGCC can be more cost

effectively configured for carbon capture than pulverized coal and will be the technology of choice when carbon is priced into decisions.

Before closing I would like to make one more technology point. There is no perfect energy technology. Each technology has both positive and negative points. For example: Wind has no CO₂ emissions; it is an abundant, domestic source with no waste products; but it takes a lot of space for the energy produced, it cannot be installed everywhere; and not everyone agrees that it is aesthetically pleasing. Because there is no perfect single energy source, and its likely there never will be, we need an array of energy options, including nuclear, natural gas, coal and renewables.

In conclusion, we look forward to working constructively with this Committee, the Administration and other stakeholders for a reasonable and responsible climate change law at the earliest practicable date.

Thank you for your consideration.